

CLAIMS

(no amendments)

1. (Previously presented) An occlusion clip comprising:
 - an occlusion portion having
 - an upper single element occlusion member having proximal and distal upper member ends;
 - a lower single element occlusion member having proximal and distal lower member ends, the lower single element occlusion member and the upper single element occlusion member combining to define an occlusion member plane;
 - a spring portion having
 - a torsion spring connecting the proximal upper member end to the proximal lower member end, the torsion spring having a spring height dimension in the occlusion member plane perpendicular to the upper and lower single occlusion members and being adapted to bias the upper and lower single element occlusion members toward a closed position wherein the upper single element occlusion member is in force contact with the lower single element occlusion member; and
 - a clip guide portion having
 - an upper clip guide extending from the distal upper member end; and
 - a lower clip guide extending from the distal lower member end;

wherein:

 - the occlusion portion and the spring portion are formed from wire having a wire width, and the occlusion portion and the spring portion are each no wider, perpendicular to the occlusion member plane, than the wire width; and
 - the clip guide portion is wider than the wire width.
2. (Previously presented) An occlusion clip according to claim 1, wherein:

the upper clip guide includes a first planar member having a top upper guide surface and an engaging bottom upper guide surface, the first planar member being perpendicular to the occlusion member plane when the upper and lower single occlusion members are in engagement; and
the lower clip guide includes a second planar member having a bottom lower guide surface and an engaging top lower guide surface, the second planar member being parallel to the first planar member when the upper and lower single occlusion members are in engagement.

3. (Original) An occlusion clip according to claim 1 wherein the spring height dimension increases as a rotational separation between the single element upper occlusion member and the single element lower occlusion member increases.
4. (Original) An occlusion clip according to claim 1 wherein the upper and lower single element occlusion members and the torsion spring are formed from a single continuous wire segment having first and second wire ends.
5. (Original) An occlusion clip according to claim 4 wherein the wire segment is formed from titanium and has a diameter in a range from about 10 mils to about 50 mils.
6. (Original) An occlusion clip according to claim 4 wherein the wire segment is formed from titanium and has a diameter in a range from about 20 mils to about 40 mils.
7. (Previously presented) An occlusion clip according to claim 1 wherein the torsion spring biases the upper and lower single occlusion members to exert an occluding force of at least 0.20 pounds.
8. (Previously presented) An occlusion clip according to claim 1 wherein the widths of the occlusion portion and the spring portion are each in a range from about 10 mils to about 50 mils.
9. (Previously presented) An occlusion clip according to claim 8 wherein the widths of the occlusion portion and the spring portion are each in a range from about 20 mils to about 40 mils.
10. (Previously presented) An occlusion clip according to claim 4,

wherein the wire has a height, and the occlusion portion has a maximum occlusion height dimension in the occlusion member plane that is no greater than twice the wire height.

11. (Original) An occlusion clip according to claim 10 wherein the wire segment is formed from titanium and has a diameter in a range from about 10 mils to about 40 mils.
12. (Original) An occlusion clip according to claim 10 wherein the wire segment is formed from titanium and has a diameter in a range from about 15 mils to about 30 mils.
13. (Previously presented) An occlusion clip according to claim 10 wherein the torsion spring defines a maximum interior height dimension in the occlusion plane when the upper and lower single occlusion members are in engagement, the maximum interior height dimension being less than twice the wire height.
14. (Previously presented) An occlusion clip according to claim 10 wherein the torsion spring biases the upper and lower single occlusion members to exert an occluding force of at least 0.20 pounds.
15. (Previously presented) An occlusion clip according to claim 10, wherein:
the upper clip guide includes a first planar member having a top upper guide surface and an engaging bottom upper guide surface, the first planar member being perpendicular to the occlusion member plane when the upper and lower single occlusion members are in engagement; and
the lower clip guide includes a second planar member having a bottom lower guide surface and an engaging top lower guide surface, the second planar member being parallel to the first planar member when the upper and lower single occlusion members are in engagement.

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60. (Previously presented) An occlusion clip according to claim 2, wherein the upper clip guide has a width greater than a width of the upper single occlusion member, and the lower clip guide has a width greater than a width of the lower single occlusion member.

61. (Previously presented) An occlusion clip according to claim 15, wherein the upper clip guide has a width greater than a width of the upper single occlusion member, and the lower clip guide has a width greater than a width of the lower single occlusion member.
62. (Previously presented) An occlusion clip comprising a single continuous wire segment having a wire width and first and second wire ends and being so formed as to have a wire loop, an upper leg extending from an upper portion of the wire loop to the first wire end, and a lower leg extending from a lower portion of the wire loop to the second wire end, wherein:
all bends in the wire segment to form the wire loop and the upper and lower legs occur in only one plane;
the upper portion of the wire loop so overlies the lower portion of the wire loop that the wire loop as a whole has a width no greater than the wire width;
each of the upper leg and the lower leg comprises:
a distal portion, termed a clip guide portion, at the respective first or second wire end; and
a proximal portion, termed an occlusion portion, extending from the wire loop to the respective clip guide portion;
the occlusion portions collectively define an occlusion region of the occlusion clip;
the occlusion region as a whole has a width no greater than the wire width;
the wire loop biases the occlusion clip to a closed position in which the upper leg occlusion portion would contact the lower leg occlusion but for an object intervening between the occlusion portions;
the bias creates a clamping force between the upper leg occlusion portion and the lower leg occlusion portion, in the closed position, sufficient to occlude a vessel or duct intervening between the occlusion portions; and
each clip guide portion has a width that is greater than the wire width.
63. (Previously presented) The occlusion clip of claim 62, wherein each clip guide portion tapers in height distally toward the respective first or second wire end.

64. (Previously presented) The occlusion clip of claim 62, wherein the clamping force is at least 0.20 pounds.
65. (Previously presented) The occlusion clip of claim 62, wherein the clip has mirror-image symmetry with respect to the plane in which the bends occur.
66. (Previously presented) The occlusion clip of claim 62, wherein the clip has mirror-image symmetry with respect to a plane that is perpendicular to the plane in which the bends occur and that divides the clip into upper and lower halves.
67. (Previously presented) The occlusion clip of claim 66, wherein the clip has mirror-image symmetry with respect to the plane in which the bends occur.
68. (Previously presented) The occlusion clip of claim 62, wherein the clip is formed from a material comprising titanium.
69. (Previously presented) The occlusion clip of claim 62, wherein the clip is formed from a titanium alloy.
70. (Previously presented) The occlusion clip of claim 69, wherein the titanium alloy comprises Ti-6Al-4V ELI.